

IN THE CLAIMS

1. A carbaceous fuel containing triemethoxymethylsilane.

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2. A carbaceous fuel containing a combustion catalyst selected from the group of triemethoxymethylsilane, dimethylphosphite, ethoxytrimethylsilane, isobutyltriethoxysilane, tetramethylsilane, dimethoxy-methyl-vinyl-silane, methyltriethoxysilane, 3-aminopropyl-triethoxysilane, 3-aminopropyl-trimethoxysilane, vinyltrimethoxysilane, diethoxydi-methylsilane, dimethoxydimethylsilane, vinyltris(2-butyldenamino-oxy)silane, tetraalkyloxysilanes, tetramethoxysilane, tetraethoxysilane, tetrapropyloxysilane, 10 tetraisopropylsilane, tetraisobutylsilane, a dialkylphosphites, dimethyl-phosphite, diethylphosphite, dipropylphosphite, dibutylphosphite, di-tert-butylphosphite, trialkylphosphites, trimethylphosphite, triethylphosphite, 15 tripropylphosphite, triisopropylphosphite, tributyl-phosphite), dimethylmethylphos-phonate, diethylmethyl-phos-phonate, P-pyrophosphate, trimethyl-orthoacetate, trimethylorthovalerate, trimethylorthobutyrate, trimethylortho-formate, alkyloxymethanes, 20 tetraalkyloxymethanes, tetramethoxymethane, tetraethoxymethane, tetrapropoxymethane, tetraisopropoxy-methane, tetratert-butoxy-methane, potassium pryophosphite, trimethylorthoacetate, triethylorthoacetate, trimethylortho-butyrate, triethylortho-butyrate, trimethylorthovalerate, trimethylorthoformate, dimethoxymethane, diethoxyethane, 25 trimethoxymethane, triethoxymethylmethane, tri-methoxymethylmethane, tetraethoxymethane, trimethoxymethylethane, triethoxymethylethane, glacial acetic acid, acetic acid anhydride, (acetyloxy) acid acid, ethyl ester (acetyloxy) acetic acid, aminooxo acetic acid, 30 aminooxo acetic acid hydrazide, ammonium acetate, acetoacetic acid, methoxyacetic acid, ethoxyacetic acid, methoxy ethyl ester of acetic acid, methoxy methyl ester of acetic acid, ethoxy methyl ester of acetic acid, ethoxy ethyl ester of acetic acid, propoxy methyl ester of acetic acid, 35 oxoacetic acid, an alkylhydroxyesters of acetic acid, methylesterhydro-xyacetic acid, ethylesterhydroxy-acetic acid, propylesterhydro-xyacetic acid, alkyl acetates, methyl ester acetic acid, ethyl arsenate, ethyl arsenite, methyl ester of butanic acid, ethyl ester of butanic acid, 2-hydroxybutanic acid, 3-hydroxybutanic acid, 3-hydroxy-40 ethylester of butanic acid, 2-hydroxyethylester of butanic acid, diphenyl carbonate, dipropyl carbonate, ethylmethyl carbonate, dibutyl carbonate, tetranitromethane,

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5 triethylphosphine oxide, triethylphosphine oxide,
triethylphosphine, diethyl-phosphinic acid,
dimethylphosphinic acid, ethyl diethylphosphinic acid,
diethylphosphonic chloride, dibutyl ester phosphonic acid,
(1,1-dimethylethyl) phosphonic acid, ethenyl diethyl ester
phosphoric acid, diethyl ethylphosphonate, ethyl
dimethylester phosphonic acid, methyl dimethylester
phosphonic acid, methyl monoethylester phosphonic acid,
methyl monomethylester phosphonic acid, methyl-O,O-
10 dimethylester phosphonothioic acid, diethyl ester phosphoric
acid, dimethyl ester phosphoric acid, tributyl phosphate,
ethylphosphate, trimethyl ester ester phosphoric acid,
triethyl ester ester phosphoric acid, tripropyl phosphate,
O,O,O,-triethyl ester phosphorothioic acid, diethylester
15 phosphorous acid, dimethylester phosphorous acid, tributyl
ester phosphorous acid, triphenyl ester phosphorous acid,
O,O,S-tieethyl ester phosphorodithioic acid, 2-methyl-
1,2,propanediol, 2-methyl-2-nitro-1,3,-propanediol, 2-
20 methyl-2-propyl-1,3,-propanediol, 1-nitrate-1,2,propanediol,
1,1',1",1'"-[methanetetracyl]tetrakis(oxy)]-tetrakis propane,
methyl propyl ether, isopropylmethyl ether, isobutyl methyl
ether, ethyl propyl ether, propylmethyl ether, butyl methyl
ether, 1,1'-[methylenebis(oxy)]bis[2-methyl-propane, 1-(1-
25 methylethoxy)-propane, 2,2',2"- [methylidyne-tris(oxy)]tris
propane, 1,1',1"- [methylidynetris(oxy)]tris[2-methyl
propane, 2-methyl-1-nitro propane, 2-methyl-2-nitro propane,
hydronitrile, 1,1,1-triethoxy-propane, 1,1,3-triethoxy-
30 propane, 1,1,1-trimethoxy-propane, 1,1,3-trimethoxy-propane,
1,1,1-trifluoro-3-nitro-propane, 2-pyrrolidinone, phenol,
and mixture.

3. The composition of claim 2, wherein the
35 combustion catalyst is selected from group consisting of
trimethoxymethylsilane, ethoxytrimethylsilane,
isobutyltriethoxysilane, tetramethylsilane, dimethoxy-
methyl-vinyl-silane, methyltriethoxysilane, 3-aminopropyl-
40 triethoxysilane, 3-aminopropyl-trimethoxysilane,
vinyltrimethoxysilane, diethoxydimethylsilane, di-
methoxydimethylsilane, vinyltris(2-butyldenaminoxy)silane,
tetramethoxysilane, tetraethoxysilane, tetrapropyloxysilane,
45 tetraisopropylsilane, tetraisobutylsilane,
dimethylphosphite, dipropylphosphite, diethylphosphite,
dibutylphosphite, di-tert-butylphosphite, trialkylphosphites
trimethylphosphite, triethylphosphite,
trisopropylphosphite, tributylphosphite), dimethyl-
50 methylphosphonate, diethylmethylphosphonate, potassium ppyro-
phosphite, trimethylorthooacetate, triethylorthooacetate, tri-
methylorthobutyrate, triethylorthobutyrate, tri-

methylorthovalerate, trimethylorthoformate, including homologues, analogues, isomers, derivatives, and mixture thereof.

5 4. The composition of claim 3, wherein the catalyst
is selected from group consisting of trimethoxymethylsilane,
dimethylphosphite, diethylphosphite, tetramethoxymethane,
tetraethoxymethane, trimethoxymethylmethane,
triethoxymethylmethane, methoxy methyl ester of acetic acid,
10 tetranitromethane, and mixture.

5. The composition of claim 2, wherein said
carboneous fuel is a hydrocarbon fuel.

15 6. The composition of claim 2, wherein said
carboneous fuel is an Enhanced Combustion Structure ("ECS)
compound having a latent heat of vaporization (LHV) equal
to or greater 21 kJ mol⁻¹ at its boiling temperature, and
a minimum burning velocity (as measured by laminar Bunsen
20 flame) of 40 cm/sec ("BV"), C₂ - C₁₂ aldehydes, aldehydic
acids, C₂ - C₁₂ ethers, ether acids, C₃ to C₁₅ di-ethers, C₁
- C₁₅ alcohols, C₂ - C₁₂ oxides, C₃ - C₁₅ ketones, ketonic
acids, C₃ - C₁₅ esters, alkyl formates, acetates,
diacetates, butyrates, orthoesters, C₃ - C₁₂ diesters, C₅ -
25 C₁₂ phenols, C₃ - C₂₀ glycol ethers, C₂ - C₁₂ glycols,
glycol ethers, C₃ - C₂₀ alkyl carbonates, C₃ - C₂₀ dialkyl
carbonates, C₃ - C₂₀ asymmetrical alkyl/dialkyl carbonates,
C₃ - C₂₀ di-carbonates, C₁ to C₂₀ organic and inorganic
30 peroxides, hydroperoxides, carboxylic acids, amines,
nitrates, di-nitrates, oxalates, phenols, glacial acetic
acids, C₃ to C₈ hydroxy esters of acetic acid, anhydrides,
methoxy methyl ester of acetic acid, boric acids,
orthoborates, hydroxyacids, orthoacids, anhydrides,
acetates, acetyls, methyl esters, nitrates, di-nitrates,
35 nitro-ethers, aldehydic acids, anhydrides, carbonic esters,
carboxylic acids, esters, di-esters, ethers, di-ethers,
formic acids, hydroxyacids, ketones, ketonic acids,
nitrates, alkyl/cyclo/cycloalkyl/aryl nitrates,
nitromethane, nitroethane, nitropropane, di-nitrates,
40 amines, anilines, amides, hydrazines, nitrosyls, imides,
methylamines, xylidine, 2,3-xylidine, ammonia,
orthoborates, orthoesters, orthoacids, oxides, oxalates,
oxalic acids, peroxides, hydroperoxides, and phenols, said
45 compound optionally containing at least one substituent
selected from alkyl, alkyloxy, dialkyl, dialkyloxy,
polyalkyl, polyalkyloxy, aryl, amide, acetate, aldehyde,

carboethoxy, carbomethoxy, carbonyl, carbonyldioxy, carboxy, ethoxalyl, ethoxy, formyl, glycolyl, glyoxylyl, hydroxyl, imide, methoxy, or methylenedioxy, nitrosyl radical, and mixtures thereof.

5 7. The composition of claim 7, wherein said ECS oxygenate is selected from the group consisting of methyl tertiary butyl ethers, ethyl tertiary butyl ether, tertiary methyl amyl ether, tertiary methyl ethyl ether, ethyl tertiary amyl ether, dimethyl ether, DIPE, methyl ester, C1 to C6 aliphatic alcohols, dimethyl carbonate, diethyl carbonate, methylal, ethylal, and mixture.

10 15 8. The composition of claim 2, wherein said fuel contains at least one non-leaded element or derivative organic or inorganic compound (NLEC") containing said non-lead element, selected from the group consisting of 1A, 2A, 3B, 4B, 5B, 6B, 7B, 8, 1B, 2B, 3A, 4A, 5A, 6A, or 7A elements of the Periodic Chart of Elements (CAS version), and mixture, wherein said element or derivative compound, is combustible and optionally has a minimum heating value of 20 4,000 Kcal/kg.

25 30 9. The composition of claim 8, wherein said NLEC is a combustible element or compound containing at least one element selected from the group consisting of aluminum, boron, bromine, bismuth, beryllium, calcium, cesium, chromium, cobalt, copper, francium, gallium, germanium, iodine, iron, indium, lithium, magnesium, manganese, molybdenum, nickel, niobium, phosphorus, potassium, palladium, rubidium, sodium, tin, zinc, praseodymium, rhenium, silicon, vanadium, strontium, barium, radium, scandium, yttrium, lanthanum, actinium, cerium, thorium, titanium, zirconium, hafium, praseodymium, protactinium, tantalum, neodymium, uranium, tungsten, promethium, neptunium, samarium, plutonium, ruthenium, osmium, europium, americium, rhodium, iridium, gadolinium, curium, platinum, terbium, berkelium, silver, gold, dysprosium, californium, cadmium, mercury, holmium, titanium, erbium, thulium, arsenic, antimony, ytterbium, selenium, tellurium, polonium, lutetium, astatine, mixture thereof, including organic and inorganic derivatives.

40 45 10. The fuel composition containing an ECS oxygenate selected from MTBE, ETBE, DMC, DEC, methylal, ethylal, methanol, ethanol, or mixture, and a compound selected from [2-(cyclohexenyl)ethyl]triethoxysilane, cyclohexenyl

dimethoxymethylsilane, benzyltrimethylsilane, N-(3-(trimethoxysilyl)propyl)ethylenediamine, N-1-(3-(trimethoxysilyl)propyl)diethylenetriamine, N-(3-(trimethoxysilyl)propyl)ethylenediamine, 1-(trimethyl(silyl-)pyrrolidine, triphenylsilanol, octamethyltrisiloxane,
2,2,4,4,6,6-hexamethylcyclotrisilazane,
hexamethylcyclotrisiloxane, hexamethyldisilane, 1,1,1,3,3,3-hexamethyl disilazane, hexamethyldisiloxane,
hexamethyldisilthiane, allyltributylsilane,
tetraalkylsilanes (e.g. tetraethylsilane, tetrabutylsilane, etc.), 3-aminopropyltriethoxysilane, benzytrimethylsilane, benzytriethylsilane, N-benzyltrimethylsilylamine, diphenylsilanediol, dihexylsilanediol,
(trimethylsilyl)cyclopentadiene, potassium methoxide,
potassium ethoxide, potassium propoxide, potassium isopropoxide, potassium butoxide, potassium sec-butoxide, potassium tert-butoxide, potassium pentoxyde, potassium tert-pentoxyde, potassium phenoxide, potassium salt of acetic acid, potassium hydrogenphthalate, potassium hydrogensulfate, monopotassium acetylenedicarboxylic acid, potassium pyrophosphate, potassium dihydrogenphosphate, potassium benzoate, potassium chloride, potassium hexoate (potassium salt hexoic acid), potassium acetate, potassium diphenylphosphide, potassium trimethylsilanolate, potassium phthalic acid, P-aminobenzoic acid potassium salt, monopotassium L-aspartic acid, potassium napthenate, potassium hexacyanoferrate (II), potassium hexacyanoferrate (III), potassium hexacyanocobalt II-ferrate, potassium hexacyanocobalt, potassium sodium ferricyanide, or mixture.

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11. A composition comprising MMT and a compound selected from the group consisting of triemethoxymethylsilane, dimethylphosphite, ethoxytrimethylsilane, isobutyltriethoxy-silane, tetramethylsilane, dimethoxy-methyl-vinyl-silane, methyltriethoxysilane, 3-aminopropyl-triethoxysilane, 3-aminopropyl-trimethoxysilane, vinyltrimethoxysilane, diethoxydi-methylsilane, dimethoxydimethylsilane, vinyltris(2-butyldenamino-oxy)silane, tetraalkyloxysilanes, tetramethoxysilane, tetraethoxysilane, tetrapropyloxysilane, tetraisopropylsilane, tetraisobutylsilane, a dialkylphosphites, dimethyl-phosphite, diethylphosphite, dipropylphosphite, dibutylphosphite, di-tert-butylphosphite, trialkylphosphites, trimethylphosphite, triethylphosphite, tripolyphosphite, triisopropylphosphite, tributyl-phosphite), dimethylmethylphos-phonate, diethylmethyl-phos-phonate, P-pyrophosphate, trimethyl-orthoacetate, trimethylorthovalerate, trimethylorthobutyrate,

trimethylortho-formate, alkyloxymethanes,
tetraalkyloxymethanes, tetramethoxymethane,
tetraethoxymethane, tetrapropoxymethane, tetraisopropoxy-
methane, tetratert-butoxy-methane, potassium pryophosphite,
5 trimethylorthoacetate, triethylorthoacetate, trimethylortho-
butyrate, triethylortho-butyrate, trimethylorthovalerate,
trimethylorthoformate, dimethoxymethane, diethoxyethane,
tetramethoxymethane, triethoxymethylmethane, tri-
methoxymethylmethane, tetraethoxymethane,
10 trimethoxymethylethane, triethoxymethylethane, glacial
acetic acid, acetic acide anhydride, (acetyloxy) acid acid,
ethyl ester (acetyloxy) acetic acid, aminooxo acetic acid,
aminooxo acetic acid hydrazide, ammonium acetate,
15 acetoacetic acid, methoxyacetic acid, ethoxyacetic acid,
methoxy ethyl ester of acetic acid, methoxy methyl ester of
acetic acid, ethoxy methyl ester of acetic acid, ethoxy
ethyl ester of acetic acid, propoxy methyl ester of acetic
acid, oxoacetic acid, an alkylhydroxyesters of acetic acid,
20 methylesterhydro-xyacetic acid, ethylesterhydroxy-acetic
acid, propylesterhydro-xyacetic acid, alkyl acetates, methyl
ester acetic acid, ethyl arsenate, ethyl arsenite, methyl
ester of butanic acid, ethyl ester of butanic acid, 2-
hydroxybutanic acid, 3-hydroxybutanic acid, 3-hydroxy-
25 ethylester of butanic acid, 2-hydroxyethylester of butanic
acid, diphenyl carbonate, dipropyl carbonate, ethylmethyl
carbonate, dibutyl carbonate, tetranitromethane,
triethylphosphine oxide, triethylphosphine oxide,
triethylphosphine, diethyl-phosphinic acid,
30 dimethylphosphinic acid, ethyl diethylphosphinic acid,
diethylphosphonic chloride, dibutyl ester phosphonic acid,
(1,1-dimethylethyl) phosphonic acid, ethenyl diethyl ester
phosphoric acid, diethyl ethylphosphonate, ethyl
dimethylester phosphonic acid, methyl dimethylester
phosphonic acid, methyl monoethylester phosphonic acid,
35 methyl monomethylester phosphonic acid, methyl-O,O-
dimethylester phosphonothioic acid, diethyl ester phosphoric
acid, dimethyl ester phosphoric acid, tributyl phosphate,
ethylphosphate, trimethyl ester ester phosphoric acid,
40 triethyl ester ester phosphoric acid, tripropyl phosphate,
O,O,O,-triethyl ester phosphorothioic acid, diethylester
phosphorous acid, dimethylester phosphorous acid, tributyl
ester phosphorous acid, triphenyl ester phosphorous acid,
O,O,S-tiethyl ester phosphorodithioic acid, 2-methyl-
45 1,2-propanediol, 2-methyl-2-nitro-1,3,-propanediol, 2-
methyl-2-propyl-1,3,-propanediol, 1-nitrate-1,2,propanediol,
1,1',1",1'"- [methanetetrayltetrakis(oxy)]-tetrakis propane,
methyl propyl ether, isopropylmethyl ether, isobutyl methyl
ether, ethyl propyl ether, propylmethyl ether, butyl methyl
ether, 1,1'- [methylenebis(oxy)]bis[2-methyl-propane, 1-(1-

5 methylethoxy) -propane, 2,2',2"- [methylidyne-tris(oxy)] tris propane, 1,1',1"- [methylidynetris(oxy)] tris[2-methyl propane, 2-methyl-1-nitro propane, 2-methyl-2-nitro propane, hydracrylonitrile, 1,1,1-triethoxy-propane, 1,1,3-triethoxy- propane, 1,1,1-trimethoxy-propane, 1,1,3-trimethoxy-propane, 1,1,1-trifluoro-3-nitro-propane, 2-pyrrolidinone, phenol, and mixture.

10 12. The composition of claim 11, wherein the compound is selected from group consisting of trimethoxymethylsilane, ethoxytrimethylsilane, isobutyltriethoxysilane, tetra-methylsilane, dimethoxy-methyl-vinyl-silane, methyltriethoxysilane, 3-aminopropyl-triethoxysilane, 3-aminopropyl-trimethoxysilane, vinyltrimethoxysilane, diethoxydimethylsilane, dimethoxydimethylsilane, vinyltris(2-butyldenaminoxy)silane, tetramethoxysilane, tetraethoxysilane, tetrapropyloxy silane, tetraisopropylsilane, tetraisobutylsilane, dimethylphosphite, dipropylphosphite, diethylphosphite, dibutylphosphite, di-tert-butylphosphite, trialkylphosphites trimethylphosphite, triethylphosphite, triisopropylphosphite, tributylphosphite), dimethyl-methylphosphonate, diethylmethylphosphonate, potassium ppyrophosphate, trimethylorthoacetate, triethylorthoacetate, trimethylorthobutyrate, triethylorthobutyrate, trimethylorthovalerate, trimethylorthoformate, including homologues, analogues, isomers, derivatives, and mixture thereof.

20 The composition of claim 2, additionally containing a glycol ether or a nitrogen containing compound.

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